

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-14. (canceled)

15. (new) A humanized biomaterial comprising a porous biocompatible composite material customized and implanted with monocyte derived cells, said monocyte derived cells being substantially irreversibly bound to said biomaterial.

16. (new) The humanized biomaterial according to claim 15, wherein the monocyte derived cells are macrophages.

17. (new) The humanized biomaterial according to claim 15, wherein the biocompatible composite material is selected from the group consisting of microfibers, ceramic materials, metal oxides, calcium phosphate ceramic, glass fibers, carbon fibers, hydroxylapatite, silicon carbide, silicon nitride, collagen polymers and a mixture of these different materials.

18. (new) The humanized biomaterial according to claim 17, wherein said biocompatible material is aluminum oxide.

19. (new) The humanized biomaterial according to claim 16, wherein said macrophages are human patient's macrophages obtained by ex vivo differentiation from blood monocytes leading to living macrophages, and are cultured under conditions enabling their penetration and adherence into biomaterial, for several hours at 37°C, with the porous biomaterial, allowing infiltration of the biomaterial and substantially irreversible binding of the living macrophages to the biomaterial, being humanized with patient's macrophages and ready for implantation.

20. (new) An implant comprising the humanized biomaterial according to claim 15, and wherein said implant is structured in a form selected from the group consisting of scaffold, tissue-supporting sponges, bone and cartilage.